

Institutional Environment and Commitment to Training

The PhD Program in Biostatistics at the Harvard T. H. Chan School of Public Health, established in 2003, trains students in the areas of probabilistic and statistical theory, biostatistical and bioinformatics methods, statistical computation and algorithm development, the ability to collaborate and communicate effectively with scientists in related disciplines and the ability to teach biostatistics and bioinformatics effectively to general or specialized audiences. The program includes training in the development of methodology, consulting, teaching and collaboration on a broad spectrum of health-related problems. The average time to graduation over the past 10 years is 5 years. Students must complete eleven courses in Biostatistics by the end of their third year in the program. This includes a required Probability Theory and Applications, Statistical Inference, and two-part Methods course. Students must complete an advanced doctoral core of courses, where they may select from classes such as Advanced Regression and Statistical Learning and Advanced Topics in Clinical Trials. The Department also requires students to explore in some depth a selected cognate field, a nonquantitative field outside of biostatistics or statistics, and participate in a consulting seminar to acquire experience in the planning of experiments and establish a collaborative interaction with an investigator.

Additionally, a written Qualifying Exam must be passed by the end of their second year. Upon successful completion, students select a Dissertation Advisory Committee, with whom they meet at least every six months. This committee administers an oral Qualifying exam, including a written report and formal presentation, within a year after completion of the written Qualifying exam to assess the student's potential to perform research in a chosen field and examine the student's knowledge of biostatistics or bioinformatics. Students must also acquire extensive experience in teaching biostatistics or bioinformatics. To meet this requirement, students ordinarily serve as a teaching assistant (TA) for an average of one course in the Department per year in the program. Finally, all students at the Harvard Chan School must complete a course in Research Ethics. Other training opportunities are available including research group meetings held by faculty members, a monthly department colloquium, weekly student seminars, and biweekly group meetings on research in quantitative genomics, AIDS, big data, environmental statistics, cancer and more. We also regularly hold short courses and special symposiums.

All Ph.D. students work with faculty on ongoing projects in methodological research and scientific collaboration. Faculty and students conduct methodologic research in Bayesian inference, bioinformatics, causal inference, clinical trials, computational biology, data analysis, decision sciences, experimental design, health policy, multivariate and longitudinal studies, quantitative genomics, sequential methods, spatial statistics, statistical computing, statistical genetics, stochastic processes and survival analysis, among other areas. Areas of application include biology, cancer, clinical research, computational biology, the environment, epidemiology, genetics, health disparities, HIV/AIDS, infectious diseases, neurology and psychiatry, among other areas. Collaborative activities include coordination of national and international clinical trials, participation in studies of potential environmental hazards, collaboration on novel genetic and genomic studies, design of health surveys, evaluation of health interventions and medical technologies and consultation with federal, state and local agencies. Students typically work with multiple faculty members on their dissertation to obtain scientific guidance and overall mentoring.

Since matriculating in August 2013, Sheila Gaynor has successfully completed all coursework requirements, the consulting requirement and research ethics course, and her cognate requirement. Sheila's cognate was completed in the area of "genetics and genomics". She took molecular biology and human genetics classes in the Chan School as well as in the Division of Medical Sciences at the Harvard Medical School with biological science doctoral students to fulfill this requirement. She has also successfully passed the written qualifying exam in January of 2015, and has passed her oral qualifying exam in June of 2016. She has served as a TA for 3 courses and has the opportunity to serve as a TA for a course in the coming year. Sheila frequently serves as a biostatistics tutor for other students at the Chan School, and is on the departmental list of recommended tutors. She is also the Commonwealth Fellowship program tutor and instructed an independent study in introductory statistics. Lastly, Sheila fulfilled her consulting requirement by independently building a collaborative relationship with a research group at Boston University and serving as the statistician on a project whose manuscript is now under review.

Sheila's dissertation advisors are Professors John Quackenbush and Xihong Lin, and they oversee her progress on her doctoral thesis research along with one other member of her Dissertation Committee, Dr. Guia Masetti. In addition, the department's Committee on Academic Standing, chaired by Professor Brent Coull (Associate Chair of the Biostatistics Department), monitors the progress of all students in meetings held 2 to 3 times each year. Student status is monitored by this committee based on a progress report form submitted by each student and their dissertation advisor every six months, indicating dates of submission or publication for completed thesis papers and expected timelines for thesis papers still in progress. Sheila has remained in good standing for all of her time as a doctoral student in the PhD program in Biostatistics.

The department provides office space and computing facilities for all students to support their coursework and thesis research. In addition, a more recent initiative of the Biostatistics Department is a Career Development Series, which is intended to support professional development of the graduate students in the Biostatistics department by holding sessions on CV and Resume development, grant writing, and talks on career paths by former students currently working in a wide range of biostatistics positions (academic, industry, government). This Career Development Series supplements other professional development seminars and workshops provided by the Harvard Graduate School of Arts and Sciences and by the Harvard Chan School.

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